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Dear Sir:

A $300 million expansion of the United States atomic energy program, officially confirmed by the Atomic Energy Commission in Washington last week, will see main activity concentrated on increasing uranium-235 and plutonium output. (Pge. 2, this LETTER; Oak Ridge & Hanford.) The additional electrical capacity that Oak Ridge will need (AEN 10/25/49), will be furnished, according to Representative Frazier, of Tennessee, by a new TVA $54 million steam plant, comparable to the New Johnsonville installation. He said it is planned in the Chattanooga area, near Hale's bar. Additional units for New Johnsonville, and possibly new hydroelectric plants, may also result from the stepped-up needs of the atomic production program.

Uranium ores, sources of which are controlled directly or otherwise by Canada and Great Britain, will continue coming to the United States, regardless of whether any new agreement is reached to increase the exchange of atomic information among the three nations. These assurances were given the United States last week by Britain and Canada, after Washington meetings of representatives of the three countries, held by the Combined Policy Committee. The present agreement governing both the exchange of atomic information among the three nations, and the allocation of atomic raw materials, ends January 1st, 1950. At that time, if they so wished, Britain and Canada could end the allocation agreement, should they be dissatisfied with the atomic information they were receiving (AEN 9/27/49). However, they have agreed to continue, and if possible improve, shipments of atomic raw materials to the United States.

Major aims of the United States in international atomic control were reiterated by President Truman at the cornerstone ceremonies recently held at the permanent United Nations Headquarters in New York. He said the United States wanted a "system of international control of atomic energy that would assure effective prohibition of atomic weapons, and at the same time would promote the peaceful use of atomic energy by all nations". This plan, he noted, was the one proposed by the United Nations Atomic Energy Commission, and approved last year by the General Assembly. The President declared the United States will support the plan unless or until a better and more effective plan is put forward...Last week, at the United Nations, Assembly President Carlos P. Romulo asked the U.N. AEC delegates to explore possibilities of a short-term truce on atomic weapons manufacture. Up to then, the chief aim was to have the Assembly continue six-power talks on atomic energy.

The International Committee for the Study of European Questions stated in London last week that the Soviet Union was trying to produce so-called "atomic clouds" as a weapon of warfare. The committee, whose members include Paul Reynaud and Maurice Schuman of France, and Lord Vansittart and Lord Brabazon of Great Britain, said Soviet scientific journals indicated "it is technically possible to produce 'atomic clouds' by allowing different kinds of gas to pass through atomic piles", and that the gas would be used against troops in the field.

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AT THE ATOMIC CITIES OF THE UNITED STATES...

OAK RIDGE, Tennessee- New $185 million uranium-235 production plant, for which plans have been pending a year, will now, under the impetus of the USSR "atomic explosion", be constructed at Oak Ridge as quickly as facilities allow. The new plant, designated K-31, will use the gaseous diffusion process and substantially add to the output of U-235 now made here by that method at K-25 and K-27 plants. (The capacity of these present U-235 production units will be increased by the K-29 project, a $65 million facility for which ground was broken this past summer, AEN 9/13/49, and that will pretreat the feedstock for these units. Maxon Construction Co., Dayton, are K-29 prime contractors.)

Oak Ridge National Laboratory's $19 million construction and improvement program (AEN 6/7/49) moved a step toward its goal with invitation no. 401-50-2A now issued to contractors to bid on an instrument laboratory, with a floor space of 23,470 square feet, one of the several buildings planned for the laboratory; bids will be received until December 15th. This construction and improvement program, wholly separate from the multi-million dollar production increase activity (above), will cover a period of approximately two and one-half years, with the Austin Company, Cleveland, doing the engineering work.

Part of the permanent housing program to replace Oak Ridge units that have outlived their usefulness was recent announcement that 450 more dwelling units in the Woodland area here have been scheduled. Bid invitation number 401-50-1A, with closing date December 13th, has been issued for these units which are the third recent large development in that area.

RICHLAND, Washington- A $25 million unit will add to the facilities at this plutonium manufacturing center, under the newly accelerated atomic program. The facility will be in addition to the two $80 million process units now scheduled for early construction here (AEN 10/25/49). Building of the three units will extend over a two-year or longer period.

Protests against the AEC decision to withdraw for the Hanford project 200,000 acres of Wahluke slope land (across the Columbia river from Hanford Works) were recently voiced by Columbia Basin commission members. They said the economy of the State of Washington would be adversely affected, and the unity of the reclamation program would be destroyed. Lands involved include a primary and secondary area. R.I. Harris, AEC assistant general counsel at Hanford, said the latter area is being withdrawn for safety reasons--in the event of earthquakes and damage to the Hanford project.

LOS ALAMOS, New Mexico- Release of information important to industry, in the fields of metallurgy and engineering, and other aspects of "declassification" featured the sixth session of the AEC technical information panel held here last week. The naming of newly discovered elements, microfilming of data, and the problem of translating material received from abroad were also discussed.

ARCO, Idaho- While a million pound concrete batch plant is being assembled at the site of the new Reactor Testing Station here, by Puget Sound-Macco (AEN 9/27/49), an aerial survey of the area by Aero Service Corp., Philadelphia, under a recently awarded contract, will cover approximately 2,600 square miles. Construction at the Experimental Breeder Reactor building (AEN 10/11/49) will be facilitated by an access road onto U.S. Highway 20, now under construction.

GREAT BRITAIN...

RADIOCHEMICAL CENTRE, Amersham- Thorium, Ltd., who have been acting as managing agents here since November, 1946, will terminate their contract March 31st, 1950. The work on artificial substances was now assuming an unforeseen importance, it was stated, and the firm felt that the running of the Centre was requiring an undue proportion of their managerial attention. The Centre, one of the five establishments in the United Kingdom's atomic energy effort is concerned with the processing, packaging, and distribution of both natural and artificial radioactive substances. The Radiochemical Centre, will, in the future, be administered by the Atomic Energy Research Establishment, at Harwell, Berks. The normal commercial activities of Thorium, Ltd., in the manufacture of industrial radioactive preparations, are not affected by this change.

INSTRUMENTS AND PRODUCTS...for nuclear work...

The Landsverk Electrometer Company, Cincinnati 31, Ohio, has resumed operations. Under the direction of Dr. O. G. Landsverk, it will specialize in the development and production of such quartz fibre types of instruments as survey meters, pocket dosimeters, pocket chambers of various types, and auxiliary units to read and charge them. For the past two years, Dr. Landsverk has been in charge of quartz fibre instrument development for the Kelley-Koett Mfg. Co.; previously, he had been engaged in the manufacture of such instruments in Chicago.

Exhibiting nuclear apparatus at the 1949 Pacific Chemical Exposition held in San Francisco Nov. 1st through 5th, were National Technical Laboratories, S. Pasadena, Calif., Radioisotope Application Co., Berkeley 3, Calif., and Tracerlab, Inc., Western Branch, Berkeley.

A barrier-type plastic, claimed to have an efficiency in absorbing nucleonic radiation of about 0.9 that of lead, for similar thicknesses of the two materials, has been developed under the direction of Dr. H. J. Marshall, heading the research and development work at Paterson Plastics and Chemical Co., Mobile, Ala. In tests, alpha particles were disregarded, and it was found that there is about 8% variation in absorption coefficients between beta- and gamma-rays. Since the material cannot stand the heat of a reactor pile, it could not be used as a primary shield. However, suggested uses include handling radioactive elements, packaging radioactive isotopes for shipment, and in detection and instrument shields.

FROM THE MANUFACTURERS - Keleket gamma survey meter, model K-350. Five range ionization chamber type, with scale changing meter (only one range visible at a time), and range of from 5 mr/hr., to 50,000 mr/hr. -- Kelley-Koett Man. Co., Covington, Ky.

Model SU-5, Beta Gamma survey meter; battery operated, portable. Manufacturer claims weatherproof. Suggested uses: radiation dosage meter, monitoring instrument. Uses sensitive thin-wall Geiger tube as detecting device, mounted in a waterproof detachable probe. Ranges: 0.02 mr/hr., to 20 mr/hr. Sensitive to gamma radiation, and to medium and high energy beta radiation -- Tracerlab, Inc., Boston 10, Mass.

Electrical reset register, now available for use with all types of nuclear and industrial equipment. Features automatic reset, self-contained power supply. Handles up to 12 counts per second.--Atomic Instrument Co., Boston, Mass.

ATOMIC PATENT DIGEST...latest U.S. & British applications & grants...

Radium ray applicator. An endless cotton belt, holding radioactive material, rotates on two support rollers, which are separated by a short distance; the belt itself is low in radioactive absorption power. A lead box contains the apparatus. U. S. Pat. No. 2,484,333, issued Oct. 11th, 1949, to George Turner, El Paso, Texas.

Method and apparatus for measuring hardness and intensity of penetrating radiation. An ionizable medium is subjected to a known intensity of penetrating radiation, and a portion of the radiation, having hardness below a predetermined value, is filtered from it. The difference of the two ionizations produced is then measured. U.S. Pat. No. 2,484,493, issued Oct. 11th, 1949, and assigned to Well Surveys, Inc., Tulsa, Okla.

Imparting high energy to charged particles by initially accelerating such particles along an orbital path by a magnetic flux, and subsequently accelerating these particles by the intermittent action of an electrical field. U.S. Pat. No. 2,485,409, issued Oct. 18th, 1949, and assigned to General Electric Co.

Means of detecting ionization, utilizing a gaseous mixture containing at least 80% by pressure of argon, and not more than 20% by pressure of carbon dioxide. U.S. Pat. No. 2,485,469, issued October 18th, 1949, and assigned to United States of America (USAEC).

RADIATION...investigations and notes...

An attempted abortion by using large doses of X-radiation has been described by Dr. Sven Hultberg, of Radiumhemmet, Sweden. The patient, a 25-year old woman, was given five minute roentgen irradiation of the lower region of the abdomen, for approximately a month and a half, during the 4th and 5th months of the pregnancy. (The woman, unmarried, had been persuaded to submit to the dosage by the man responsible for the pregnancy, while both were working in a military hospital, and access could be had to X-ray apparatus. The man had only a rudimentary knowledge of the apparatus.) A wound which would not heal arose approximately 3 months after the irradiation started. Treatment was not sought until a month after delivery of the child; complete healing of the wound was affected at Radiumhemmet by Dr. Hultberg. Concerning the child, which received the large irradiation dosages, the patient states her son has an unusually small head for his age; it has grown, but not proportionately to his body. He began to talk at the age of two and one-half, although so far he has uttered but single words; at 2 years, 3 months, he began to walk. There are no signs of apathy. Dr. Hultberg states, however, that it is too early to say whether the boy has suffered any serious harm from the irradiation.

Radiation cataracts among physicists (AEN 8/30/49 & 10/11/49) have occurred only when the eye has received much more radiation than the permissible dose, Dr. Shields Warren, Director of the AEC's division of Biology and Medicine recently noted. He said the scientists involved agreed they had received one or more acute exposures (by being inside the protective barriers of the cyclotron during operation), and that the exposure was equivalent to 20 to 100 roentgen units in the region of the head and eye, in addition to normal "permissible" dosages. While, he said, dosimetric methods for neutrons (AEN 8/2/49) are not, as yet, satisfactory, workers keeping within the permissible dose level have not shown any evidence of harm.

The advantages of direct measurement of radiation energy dissipation in liquid or solid media has prompted work on the chemical measurement of such ionizing radiation. Day and Stein, of Royal Victoria Infirmary, and the University of Durham. (England), respectively, have conducted investigations based on the production (in acqueous solutions) by ionizing radiation, of chemical changes which can be interpreted as due to the action of hydrogen and hydroxyl radicals. Since many substances can act as "acceptors" for the radicals, the resulting products may serve as a measure of the radiation dosage. As "acceptors", benzene and sodium benzoate were found satisfactory, since they are hydrolyzed, forming, among other substances, phenolic products. The phenols are then estimated colorimetrically, using Folin's reagent.

RADIOISOTOPES...case study...

Observations on the undesirable effects of radioactive phosphorous (P-32) therapy have been made by Andrews, at the Thomas Henry Institute for Medical Research, University of Michigan, Ann Arbor. In treating a patient suffering from polycythemia vera, with the radiophosphorous, severe thrombocytopenic purpura, associated with prominent changes in the appearance of the magakaryocytes, occurred. This dosage of radioactive phosphorous had not been found excessive in other patients with the same disease. It is believed that the profound thrombocytopenia which developed in this patient was an exaggeration of the usual decrease in platelets caused by P-32 treatment. The investigator points out that experience with this patient, as well as the course of other patients treated at the Institute, suggests that individuals who have low platelet counts before therapy are more likely to suffer severe thrombocytopenia after P-32 is given than are those who have normal or high platelet counts at the onset. It is suggested by Andrews that radioactive phosphorous be used with caution, especially in patients who already have thrombocytopenia.

RAW MATERIALS...for nuclear work...

UNITED STATES...Reno, Nevada- The discovery of torbernite, a radioactive mineral that may contain up to 60% uranium oxide, has been reported by C. R. Quinlisk, of Reno. Find was made in the Majuba Hill copper-tin mine, 22 miles northwest of Imlay, in a stope off the Majuba tunnel at a vertical depth of 700 ft.

...Myton, Utah- First shipment of uranium and vanadium ores made from the Uintah Basin was recently sent to Rifle, Colorado, by L. Cooper, and C. Sands, from their claims, about 12 miles south of Myton.

...Grand Junction, Colorado- The Small Spot Mining Company, in the Calamity uranium district near Gateway, is enlarging its operations. A group of 8 carnotite claims on Blue Creek, 14 miles up the river from their present operation, has been leased. One of the largest producers of uranium-vanadium in the Colorado Plateau area, the Small Spot Company, in their new location, plan to expand their production to between 100 to 150 tons daily.

CANADA- Amax Athabasca Uranium Mines, Ltd., a new company, has been formed to acquire 8,000 acres northeast of Black Bay, in the Lake Athabasca area Northern Saskatchewan. Work is now underway there searching for radioactive ors, with a crew on the ground trenching and test-pitting...LaRonge Uranium Mines, Ltd., report that surface samples taken from a large pegmatite dike on their property at Manning Lake have returned an assay of 0.372% uranium oxide... A syndicate of Grand Rapids, and Holland, Michigan businessmen, trading as the Ottawa Associates, have uncovered a radioactive zone 184-feet long on their 11-claim group directly north of the Agawa River, on the shore of Lake Superior.

AUSTRALIA- Mr. Victor Johnson, Australian Minister for the Interior, has announced the discovery of radioactive minerals at Ramjungle, about 50 miles south of Darwin. He said samples have been sent to the Bureau of Mineral Resources at Melbourne for examination; assays are not as yet available.

NORWAY- Drilling for uranium ores in the Setesdal Valley has been successful, the Council for Scientific Research recently stated. The Council said that underground mining operations had started there with a crew of thirty.

SOVIET UNION- Literary research in the British Museum by Isaac Deutscher, British journalist and specialist in Russian affairs, has uncovered accounts of uranium minerals in the Soviet Union, published before the metal assumed its present importance. The publications reveal that there are rich deposits of uranium minerals in Central Asiatic provinces, accordig to a 1935 report of Professor I. Y. Bashilov. He describes mines at Tinia-Muniun, in Soviet Turkestan, on the northern slope of the Alai mountains, southwest of the town of Osh, and 62 miles from Fedchenko on the Central Asiatic railroad. Deposits of uranium ore were found as well in a wide area spreading westward from Osh to the neighborhood of Samarkand, and at Taboshar, on the western slope of the Kara-Mazar mountains, between the Sirdaria and Angren rivers, 40 kilometers north of Khodzhent. Prof. Bashilov also mentions that uranium minerals were found at Kara-Chagyr, 50 kilometers north of the town of Andizhan, and at Agadik, 16 kilometers from Samarkand.

Sincerely,

The Staff,
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